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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,252	01/14/2005	Sadao Murasawa	1422-0650PUS1	8744

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

HAILEY, PATRICIA L

ART UNIT	PAPER NUMBER
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1755

NOTIFICATION DATE	DELIVERY MODE
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08/17/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/521,252

Applicant(s)

MURASAWA ET AL.

Examiner

Patricia L. Hailey

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1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>01/14/05; 04/14/05</u> . | 6) <input type="checkbox"/> Other: _____ |

Applicants' Preliminary Amendment, filed on January 14, 2005, has been made of record and entered. Claim 3 has been amended to eliminate improper multiple claim dependency; no claims have been canceled or added.

Claims 1-4 are pending in this application.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on January 14, 2005.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. ***Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Behringer (U. S. Patent No. 3,447,957).***

Behringer teaches a composite mixture of photoconductive particles and an insulating, adhesive film-forming resin on a substrate. See col. 2, lines 18-28 of Behringer.

Examples of the photoconductive particles include, zinc oxide and titanium dioxide (considered to read upon **claim 3**). See col. 2, lines 34-48 of Behringer.

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Examples of the resin include shellac. See col. 2, lines 49-65 of Behringer.

Examples of the substrate include a heat resistant plastic (considered to read upon the limitation "organic substrate" in **claim 1**). See col. 3, lines 43-50 of Behringer.

In view of these teachings, Behringer anticipates claims 1 and 3.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al. (U. S. Patent No. 6,407,033) in view of Behringer (U. S. Patent No. 3,447,957).

Kimura et al. disclose photocatalyst-carrying structures having an adhesive layer between a photocatalyst layer and a carrier. See the Abstract of Kimura et al.

Examples of the photocatalyst include titanium dioxide (TiO₂) and zinc oxide (ZnO). See col. 8, lines 5-26 of Kimura et al. (considered to read upon **claim 3**), which also discloses that photocatalyst transparency is improved and linear transmittance is high when a photocatalyst of 5-40 nm in particle diameter is employed (col. 8, lines 9-11 of Kimura et al.; this disclosure is considered to read upon **claim 2**).

Examples of the adhesive include acrylic-silicon resins, epoxy-silicon resins, and resins containing polysiloxane. See col. 9, lines 11-15 and 41-44, and also col. 10, lines 33-40, the latter of which discloses polyester resin and alkyd resin as exemplary sources of polysiloxane.

The carrier can be in the form of "any complex shape such as....fiber and net." See col. 11, line 66 to col. 12, line 25 of Kimura et al., which also discloses organic polymers as an exemplary substrate (col. 12, lines 16-25; considered to read upon **claim 4**).

Kimura et al. do not disclose shellac as an adhesive layer.

Behringer is relied upon for its teachings as stated in the above 102(b) rejection.

In addition to teaching shellac as an exemplary resin, Behringer also discloses alkyd resins and polyesters as exemplary resins (col. 2, lines 57-65) in Patentees' composite mixture of photoconductive particles and an insulating, adhesive film-forming resin on a substrate.

Because both Kimura et al. and Behringer teach comparable structures having the same components (photoconductive/photocatalytic particles of titanium dioxide and zinc oxide, an adhesive layer, and a substrate), motivation to combine the teachings of these references is deemed proper.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Kimura et al. by substituting the resins disclosed therein as the adhesive layer with shellac resin, as suggested by Behringer, which shows that shellac, alkyd resins, and polyesters are equivalent adhesives known in the art. Therefore, because these were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute shellac for alkyd resins or polyesters, which are disclosed in Kimura et al.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-

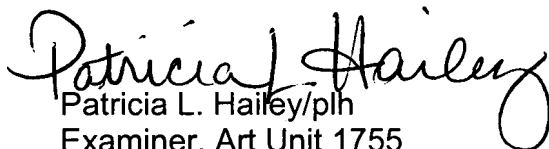
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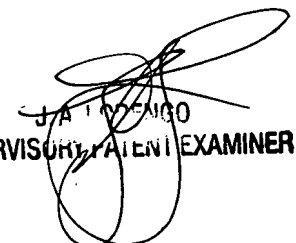
1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Patricia L. Hailey/plh
Examiner, Art Unit 1755
August 13, 2007


J. A. LORENZO
SUPERVISOR, PATENT EXAMINER